

Release date: 2 December 2015

**Hybrid VRF system delivers the best of VRF and Chiller technologies**

Mitsubishi Electric has launched a new air conditioning system that delivers levels of comfort normally associated with Chiller technology, whilst providing the flexibility and efficiencies of traditional VRF (Variable Refrigerant Flow).

The City Multi Hybrid VRF system operates without using refrigerant in occupied spaces, removing the need for leak detection equipment and allowing more properties to take advantage of manageable phased installation through the system’s modular two-pipe design.

Mitsubishi Electric has identified the need for a new approach to delivering comfortable heating and cooling to buildings as the industry comes to terms with the impact of F-Gas legislation and the move towards refrigerants with a low global warming (GWP) potential.

“There is a lot of legislation impacting on the use of energy in the built environment and at the same time, there is a drive to look for new refrigerants to mitigate any harm to the environment”, explains Sebastien Desmottes, Product Marketing Manager for the company.

“This will have a major impact on the industry over the next 15 years but in the meantime, we have to deliver systems that provide customers with a comprehensive choice to help them reduce emissions and running costs whilst meeting current and future legislation.

“BS EN378 in particular will restrict the amount of refrigerant that can be used in occupied spaces and we believe there is now a growing market for this type of system”, adds Desmottes.

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At the heart of the new system is an HBC (Hybrid Branch Controller) box, connected to an outdoor City Multi unit via traditional refrigerant piping. Between the HBC and the indoor fan coils, the system uses water piping but is still able to deliver mild air-off temperatures and a great stability of temperature all year round, supplying Chiller levels of comfort to occupants.

With no refrigerant in occupied spaces, Hybrid VRF also enables simple compliance with   
BS EN378 and completely removes the need for leak detection in any occupied room. This technological benefit also means a low overall system refrigerant volume.

At the same time, Hybrid VRF offers the complete flexibility of design and installation that City Multi VRF has become renowned for whilst still providing centralised control, individual operation, and simultaneous heating and cooling with heat recovery.

Each individual HBC can supply heating and cooling to 16 individual indoor units – using City Multi’s unique two-pipe system and including options for ducted, cassette and floor-standing models. Two main HBC’s and two sub units can be connected to the same City Multi outdoor unit to deliver simultaneous heating and cooling to up to 50 individual rooms or areas.

“We still see significant scope for VRF and Chiller technologies but pressure on refrigerants in occupied spaces, and the need for increased levels of efficiency and performance make Hybrid VRF the ideal choice for a growing part of the sector”, adds Desmottes.

Current standards restrict the use of refrigerants in buildings, with BS EN378 in particular intended to minimise possible hazards to persons, property and the environment from refrigerating systems and refrigerants. As such, leak detection must be provided if, in the case of R410a, a concentration of 0.44 kg/m3 refrigerant could be exceeded if all of the refrigerant from a system were to leak into a single room.

This legislation is particularly applicable for hotels. Generally, this limits systems to about 20Kg of R410a or forces the addition of leak detection systems.

The only other option is to break larger systems down into smaller ones. Either way, an increase in cost and complexity cannot be avoided, and this is where Hybrid VRF now offers an easy solution.

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“We realised that one way to reduce cost and minimise possible hazards to persons, property and the environment, would be to remove the refrigerant from occupied spaces using a water based system,” explained Desmottes. “This Hybrid VRF system has been developed exclusively to answer this need”.

The outdoor unit behaves in much the same way as a two-pipe heat recovery VRF system with two refrigerant pipes connecting the HBC, which has been optimised to provide the same efficiency as standard VRF and offer simultaneous heating and cooling with heat recovery.

However, instead of two refrigerant pipes sending refrigerant for cooling or heating to the indoor units, hot or cold water is sent instead using either plastic or copper pipe. Efficiency is further improved from the heat-recovery defrost, enabling short defrost times with immediate return to heating.

The system is fully integrated in its control and components through the use of inverter driven pumps and flow control valves which are all built into the HBC.

“Hybrid VRF is designed specifically to deliver the function of a four-pipe fan coil Chiller system with the efficiency and flexibility of modern VRF in one system”, adds Desmottes. “We expect to see BS EN378 legislation impact more on the built environment and have developed this range to answer that need”.

Further details on the Hybrid VRF system is available by calling 01707 282880 or emailing [airconditioning@meuk.mee.com](mailto:airconditioning@meuk.mee.com).

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**Note to editor:**

Founded in 1921, Mitsubishi Electric is a global, market leading, environmental technologies manufacturer, producing an advanced range of heating, air conditioning and ventilation equipment. The company realises that ensuring the right solutions are selected for each individual building, requires collaboration by all involved. Mitsubishi Electric has therefore changed the way it does business to ensure engagement with all involved in delivering sustainable buildings so that together, we can make a world of difference.

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MEUK/172/15